Academic Accommodations and Transition to School Following Concussion: No Time for Cookie Cutters

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Learning Objectives

• Participants will understand the factors affecting readiness to return to play and school following a concussion.

• Participants will learn about transitioning students back to school following a concussion.

• Participants will learn the types of academic accommodations that may be implemented for the returning student suffering from a concussion.
Why is Sports Concussion such an Issue?

- Increased Athletic Exposures.
- Recreational and school-based sports.
- Playing year round.
- Playing multiple sports.
- Earlier ages than previous generations.
- More females playing than previous generations.
- Sports Figures and the Media.
- New Brain Research and Scientific Advances.
- Second Impact Syndrome.
FACTS

• Between 2001-2005, approx. 50% of all ER visits were for sports-related concussion.*
• 65% of sports-related concussions that are seen in ERs are among youth 5-18 years old.*
• Between 1997-2007 the number of children in ERs for concussion doubled.*
• Moser, Schatz, & Jordan (2005) reported that in a sample 223 high school students, 63% were identified as having suffered a recent or previous history of concussion.

*From Congressional Field Hearing Testimony on Protecting School-age Athletes from Sports-related Concussion Injury, Newark NJ 9-8-10 (Colvin, et al. 2010.)
Concussion 101

• “...a transitory, complex pathophysiological process affecting the brain, induced by biomechanical forces” (McCrory et al., 2009).
• Any change in mental status or consciousness as a result of a blow or force to the head.
• Acceleration/Deceleration or Rotational forces.
• Most common form of head injury for athletes.
• It is a Mild Traumatic Brain Injury.
• It should be taken seriously.
• Symptoms may be delayed.
• Post Concussion Syndrome (3 Months).
COMMON SIGNS and SYMPTOMS OF CONCUSSION

- Headache
- Dizziness
- Nausea/vomiting
- Memory/attention/concentration problems
- Slowness in information processing
- Fatigue
- Visual Disturbance
- Light/Noise sensitivity/Tinnitus
- Balance/Vestibular problems
- Irritability/Emotion and Behavior Changes
- Sleep Disturbance
• Most concussions do not involve loss of consciousness.
• CT scans are typically NORMAL.
• Helmets and mouth guards do not prevent.
• Not always caused by head-to-head contact.
• No fixed recovery time – the brain requires adequate time to heal.
• Symptoms may be delayed following the initial injury.
• Amnesia is a highly significant indicator of the severity of concussion.
• We no longer grade concussions.
• Many concussions are misdiagnosed.
• Each concussion is UNIQUE.
Athlete Reporting

- Young athletes fear loss of playing time.
- They are told, “No pain, no gain.”
- Peer pressure and bullying.
- Parent pressure on coaches.
- Approximately up to 66% of youth don’t report (McCrea, et al, 2004).
Youth Concussion

• Youth are more vulnerable and susceptible.
• Youth take longer to recover.
• Long term effects of concussion may not be known because the brain is still developing.
• There seems to be a synergistic effect or predisposition for youth who have learning or attention disorders.
When in Doubt, Sit Them Out

• No youth should return to play if a concussion is suspected.
• Immediate removal from the game and seek examination by a health care professional with expertise in sports concussion.
Healthy youth with 2 or more concussions in their past had more symptoms, complaints, and problems with attention than healthy youth who had 1 or no concussions.
Need to Keep Youth Out Longer?

• A *Pediatrics* 2013 study by Eisenberg et al. showed that repeated concussions and concussions in close proximity result in a longer recovery period.

• New studies with DTI and Cerebral Blood Flow measures indicate that concussed youth brains take months to normalize.
State Concussion Legislation

46 States and D.C. have passed concussion laws.
Case of Zachary Lystedt

- Second Impact Syndrome Awareness prompted the first State Concussion Law in the state of Washington (2009)
- October 2006
- 13 years old
- Middle School football game
- Suffered concussion
- Continued to play and collapsed
- Two brain surgeries
- Walked with his graduation class June 2011
Washington Law
Enacted in 2009

• Calls for guidelines and educational programs to be developed by school districts.
• Calls for Mandatory Consent with Fact Sheet signed by athletes and a parent/guardian.
• Immediate removal if concussion is suspected.
• Evaluation by health care provider trained in evaluation and management of concussion.
• Written medical clearance before return to play.
• Legal immunity for school districts that comply with the law.
Three Tenets for State Laws

• Concussion Awareness and Education

• Mandatory Removal From Play: “When in doubt, sit them out.”

• Written Medical Clearance Before Return To Play
What Should a School’s Fact Sheet Include?

- Quick Facts about Concussion
- Signs of Concussion
- Symptoms of Concussion
- What to do if a concussion is suspected
- What can happen if not treated properly
- Academic accommodations
- Graduated return-to-play protocol
Concussion Testing
Neurocognitive or Neuropsychological Testing

- Provides added value in diagnostic decisions.
- Helps to determine recovery.
- More sensitive than CT/MRI.
- Studies have shown that many of those (1/3 or so) who feel recovered actually differ significantly on cognitive testing from those who have not sustained a concussion.
Computerized Baseline and Concussion Testing

Short sampling of neuropsychological tests covering areas such as memory, attention, reaction time, visual-motor speed, and other brain functions that are typically affected by concussion.
What is Baseline Testing?

- AKA Preseason concussion testing.
- *Baseline testing allows for comparison against oneself.*
- It is ONE tool to help with return to play decisions.
- Baseline testing is NOT
  1. intelligence testing
  2. achievement testing
  3. diagnostic of a learning disorder or ADHD.
Issues in Implementation of Baseline Testing in Schools

- Improper use of concussion and baseline testing can result in invalid test results.
- Are the procedures, safeguards, and attitudes toward baseline testing equal to those of other school and educational testing?
- Do these test results become part of the medical or educational record?
Check for Factors That May Affect Testing and Results

- Distractions during testing, especially when testing is performed in groups, in noisy settings, or with others in the room who are behaviorally acting out.
- Reading difficulties or lack of paying attention to the instructions.
- Attention or learning disorders that result in inconsistent performance.
- Fatigue, illness, or testing after an athletic practice or game.
- Right-left confusion when using a computer mouse or keyboard.
- Faulty equipment, such as a computer mouse that sticks or doesn’t function properly.
- Color blindness (especially if the test items require color discrimination).
- Lack of effort, negative attitude, or not taking the test seriously.
- Intentionally faking bad (sandbagging).
- Example: Listening to advice from others on how to take the test.
- Cheating.
- Testing at HOME.
• **Who should interpret baseline tests?** Only a trained health care professional with experience in concussion management should interpret the results of baseline exam. When possible, ideally a neuropsychologist should interpret the computerized or paper-pencil neuropsychological test components of a baseline exam. Results of neuropsychological tests should not be used as a stand-alone diagnostic tool, but should serve as one component used to make return to school and play decisions.
Working With Schools: Neuropsychologist Consultant

- Trained in understanding brain-behavior functions.
- Trained to interpret neurocognitive testing.
- Understands test validity and test sandbagging issues.
- Understands effects of individual’s premorbid profile (LD, ADHD) and extraneous factors on test performance.
- Sensitive to the emotional component of concussion and the effects on academic performance and quality of life.
- Can assist schools in devising academic accommodations.
Readiness to Return to School and Play
Guidelines

- Zurich Consensus Statement 2013
- American Academy of Neurology, 2013
- Centers for Disease Control and Prevention, 2014
SCCNJ Return to Play Protocol Recommendations

- Asymptomatic
- Neurocognitive Testing at Baseline or Stable
- Physical Exertional Testing & Graduated Exercise (Zurich Guidelines)
- In youth, three weeks no symptoms suggested
- Pediatrics (2011): approximately 1/3 of youth continue to have decreased cerebral blood flow after 30 days.
IMPORTANT

- A student athlete must feel 100% and be back to all regular cognitive/academic activities without the extra accommodations, as at pre-concussion, BEFORE returning to sports.
- In cases of lack of full recovery, such as in extended post concussive syndrome, a mild modified, risk free exercise plan can be created to help keep the student fit and conditioned, without return to the sport.
Importance of Immediate Rest

- Animal model: voluntary exercise in concussed rats may delay recovery if administered too soon following TBI.
  *(Griesbach et al., Neurosci 2004)*

- In high school athletes, hyperactivation on fMRI during first week predicted prolonged clinical recovery. Brain activation immediately following a concussion may result in longer period of symptoms
  *(Lovell et al., Neurosurg 2007)*
Cognitive and physical rest, especially immediately following a concussive injury, has been promoted as the “cornerstone” of concussion management.

(McCrory et al., CISG 2009)
• We identified 49 individuals (ages 14-23) referred to the SCCNJ for diagnosis/management/treatment, grouped on the basis of time post-concussion:
  - Group 1: 1-7 days (N=14)
  - Group 2: 8-30 days (N=22)
  - Group 3: 31+ days (N=13)
• Placed on cognitive/physical rest for 1 week
• Significant effect of rest on cognitive function and symptoms, no matter how much time had elapsed since the concussion.

First Published Scientific Evidence that Rest Works
Retrospective Study

Placed on cognitive/physical rest for 1 week:

• no school, homework tests, chores
• no travel, shopping, trips outside of the home
• no driving, social visits in or outside of the home, increased sleep
• dramatic reduction of TV viewing
• no watching athletic games or visually intense movies,
• no video games, no computer usage, no texting
• phone calls only if necessary
• no reading unless minor in nature (such as reading directions on a medication bottle)
• no physical exercise, lifting weights, physical activity results in perspiration
• plenty of sleep

Patients were provided with a checklist of recommendations to follow.
Academic Accommodations and Strategies
Symptoms Affect School Performance

- **Physical**: Headache, visual difficulties, poor sleep, fatigue, light/sound sensitivity, balance.
- **Cognitive**: Memory and learning deficits, slowed processing, distractibility, lack of focus, decreased executive functions (organization/decision-making/judgment), word-finding difficulties.
- **Emotional/Behavioral**: Irritability, sadness, anxiety, lack of motivation, decreased self-esteem, social withdrawal.
Working with Schools
A Model for Academic Accommodations

- **Acute Phase**
  Time off from school, Mental and Physical Rest.
  No Homework, Tests, Assignments.
  No Computers, Excessive Reading or Visual Stimulation.

- **Recovery Phase**
  Start with Partial Days transition to Full Days, with rest breaks.
  Start with no note-taking, school work/tests/computers, transition to extended time
  and slow pace for assignments and tests. Slowly progress to normal academics.
  *Once asymptomatic with normal academics, proceed with exertional testing.

  No gym or sports until medically cleared.

- **Chronic Phase**
  More Comprehensive Academic Accommodations.
  504 Plan-IEP.
  Homebound Instruction.
  Medical Leave.
  Comprehensive Neuropsychological Evaluation.
Accommodations and Strategies

- Devise a plan for each school subject that minimizes any make up work to that which is absolutely essential.
- Consider what knowledge the student has already demonstrated.
- Audio books or videos instead of reading.
- Note-takers or teacher notes.
- Encourage repetition to aid memory.
- Avoid putting student on the spot in class.
- Assist with reminders and organizational aids.
- Apply oral examinations instead of visually based tests.
- Papers instead of tests.
- Quizzes instead of midterms.
- Extended time on testing and extended deadlines.
Accommodations and Strategies (cont’d)

- Preferential seating.
- Quiet lunch time.
- Rest breaks...trips to nurse.
- Sunglasses may be needed.
- Reduce distractions.
- Avoid multi-tasking.
- Allow for correction of careless mistakes.
- Reduce computer usage.
- If the student has fallen considerably behind, consider make up classes and/or individual tutoring to complete requirements during school breaks.
- Avoid re-injury!
Educational Planning

- Successful educational planning requires a team effort and good communication. Be sure to include all stakeholders: student, parents, counselor, teachers, school nurse, athletic personnel, psychologist, CST, health care professionals.

- It is unreasonable to expect a student who is recovering from a brain injury to not only keep up with the regular school load, but to also make up for all assignments missed.

- Do not rush the student to make up missed assignments. Accommodate by requiring make up of what is necessary to determine learning.

- Remember...the point of education is to educate our children and help them master skills, not to torture them with unreasonable expectations.
Concussion Case Example
16 year old female 11th grade Honors Student, No previous hx of concussion

- Came for exam 12 days after concussion sustained at a party.
- After head injury, had mild headache, did not report to anyone.
- Went to school next day and sent home with headache, nausea, concentration problems.
- Saw pediatrician, diagnosed with concussion, stayed home for 3 days.
- Returned to school “on and off”, going home repeatedly due to symptoms.
- Baseline testing at school was INVALID, and could not be used.
- Post Concussion testing at SCCNJ- Below average reaction time-but no good baseline for comparison.
Concussion Case Management

Initial Exam Recommendations:
- One week of comprehensive rest at home—Rest Checklist

Re-exam one week later after rest period and created educational plan:
- Return to school on part-time basis, if tolerates, progress to full day
- No note taking/provide notes
- No computer work
- No gym, sports
- No tests, quizzes, ease into homework
- Extended time on tests-when ready
- Extended homework deadlines
- Tutoring and consultation as needed
- Rest Breaks, School nurse visits
- Shorten written assignments, postpone work deadlines
- Oral instead of written exams
- Sunglasses
Re-exam 3 Weeks Later

- No symptoms since one week prior.
- Felt 100%.
- Was back to school “full speed” with no accommodations.
- Ready to complete exertional testing with athletic trainer.
- Completed/passed graduated exertion protocol.
- Advised to wait one more week before contact risk but allowed to exercise.
- Chose not to engage in contact sports for the rest of the season.
- From initial, uncomplicated concussion until full clearance (academics and gym) = 2 months.
Post Concussion Syndrome

- Symptoms do not resolve after three months.
- Requires longer, more drawn out process of academic accommodations.
- May require homebound instruction or medical leave.
- Need an even more comprehensive management strategy and team approach.
Treatment and Management
A Team Approach

- Cognitive and Physical Rest-Immediate
- School Interventions and Accommodations
  - Athletic Training Exertional Testing
  - Medication-Headaches, Attention
    - Biofeedback-Headaches
  - Vestibular Therapy-Balance/Vertigo
  - Chiropractic/Craniosacral Therapy
    - Vision Therapy
  - Psychotherapy/Counseling-Emotional Adjustment
    - Neurological Evaluation for PCS
    - Other Alternatives
Key Points

- When in Doubt sit them Out.
- Become familiar with your state law.
- Develop a school concussion policy.
- Take care in developing and administering a baseline testing program.
- Know the signs and symptoms of concussion.
- Understand how symptoms interfere with school performance.
- Know that Rest is Best.
- Provide appropriate academic accommodations.
- Monitor the student’s recovery.
- Remember no two concussions are alike.
- Do not rush the student back to school or full academic activity: Recovery takes time.
- Use a team approach for management.